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A NEW GENUS AND NEW SPECIES OF RHYPAROCHROMINAE (HEMIPTERA: LYGAEIDAE) FROM WESTERN NORTH AMERICA

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Abstract.—A new genus, *Orphnotrechus,* and new species, *O. slateri,* are described. *Orphnotrechus* is placed in the tribe Rhyparochromini and is most closely related to *Peritrechus.* A key to the genera of North American Rhyparochromini is provided.

On the occasion of this Festschrift in his honor, I take pleasure in dedicating a new genus and species to Dr. James A. Slater, my good mentor and friend, in recognition for his contributions to Hemipterology.

Orphnotrechus, new genus
Figs. 1–9

Diagnosis. Thorax and hemelytra dull pruinose, head and abdomen shiny; entire body and appendages dark brown-black with few obscure yellow-brown maculations; pronotal margins carinate, nearly straight; profemora incrassate, armed beneath with two rows of denticles, inner row of two major and eleven minor denticles (Fig.3); claspers with flattened hook (Fig. 6); spermatheca with small bulb, annulate midduct short (Fig. 9).

Description. Smaller in size and narrower in shape than *Peritrechus* (Fig. 1); body sparsely covered with short adpressed sericeous hairs, denser on head and abdomen; thorax and hemelytra dull pruinose, head and abdomen shiny; coarser punctures on posterior lobe of pronotum, corium and clavus, body otherwise finely punctate; coloration of body and appendages dark brown-black with few obscure brown maculations. Head short, almost porrect (Fig. 2), inserted into prothorax nearly to eyes; vertex slightly convex, nearly flat; eyes prominent, antenniferous tubercles very short, not visible from above, lora flat, bucculae low, meeting caudad in blunt V at level of eye. Pronotum laterally carinate, wider than long, length subequal to head, shorter than scutellum, slightly convex above, not constricted laterally or dorsally; lateral margins nearly straight, converging cephalad; anterior angles of pronotum about as wide as width of head across eyes; anterior margin straight, no collar or impression present; posterior margin concave. Scutellum longer than wide, nearly flat, slightly elevated above hemelytra, twice as long as commissure. Hemelytra (Fig. 1) laterally gently convex; three distinct and one irregular row of large punctures on clavus; two rows of punctures on corium along cubital vein, other punctures on corium scattered; membrane slightly shorter than length of corium with four longitudinal veins; median fracture long, exceeding apex of scutellum. Scent gland evapatorium rugulose, covering two-thirds of metapleuron and posterior margin of mesopleuron; peritreme callosity linear, curving caudad; metapleural flange impunctate, set off by row of

punctures. Thoracic sterna moderately convex, without carinae or grooves. Abdominal trichobothrial distribution and sclerite fusion pattern as in other Rhyparochromini. Spiracles three and four dorsal on connexivum. Epipleurites (inner laterotergites) present on segments three to six. Anterior scent gland scar between terga 3 and 4 slightly broader than posterior two scent scars (terga 4–5 and 5–6). Tergum 7 caudally truncate. Sternum 7 with two large anterior apodemes on each side of midline, each apodeme subequal in width to the space between the apodemes. Antennae moderate in length (Fig. 1), first antennal segment just exceeds apex of tylus; segment four a little longer than segment two and equal to length of head; antennae densely clothed with short pale hairs, and sparsely with longer hairs about width of antennae in length; a single short spine on inside of first antennal segment. Legs moderate in length (Fig. 1); profemur (Fig. 3) incrassate, half as wide as long, length equal to width of head and length of scutellum, armed beneath with two rows of small denticles, inner row with two large denticles; other femora moderately incrassate; protibia slightly bowed, with field of small tubercles beneath; coxa without spines; metatibia about as long as width of pronotum, first metatarsomere longer than second and third together; meso- and metatibia with distal row of four short spines. Parandria (p) of male genital capsule (Fig. 4) narrow, pointing cephalad. Clasper (Fig. 6) with hook flattened, blade-like. Spermatheca (Fig. 9) with small bulb and short annulated midduct.

Etymology. Orphnotrechus is derived from Greek *orphnos,* dark and *trechon,* to run, hence, a dark runner, in parallel with *Peritrechus.*

Discussion. Although the nymphs have not yet been found, the scent gland scar between terga three and four is wider than the scent gland scars between terga four and five and five and six, which is characteristic of rhyparochromines with a Y-suture. Therefore I provisionally place *Orphnotrechus* in the Rhyparochromini rather than the Megalonotini, which often has other scent gland patterns. Moreover, the overall morphology is similar to *Peritrechus* Fieber, so much so that I originally thought I had a black *Peritrechus.* However, the description of *Cordillonotus* by Scudder (1984) makes it apparent that a new genus is warranted because the species keys out to *Cordillonotus,* although it lacks the long erect bristle on each anterolateral corner of the pronotum, and the anterior lobe of the pronotum is dull pruinose, not shiny. Moreover, *Orphnotrechus* is almost entirely dark brown-black while *Cordillonotus* has the posterior lobe of the pronotum, corium, legs, and antennae pale, in contrast with the dark scutellum and anterior lobe of the pronotum. *Peritrechus,* a relatively large Holarctic genus of about 25 species, similarly differs in having a contrasting thoracic color pattern, as well as a distinctive yellow V-shaped mark on the apex of the scutellum and a conspicuous pale spot on the base of the membrane. In the available keys to genera of North American Lygaeidae, *Orphnotrechus* does not readily key out to any of the genera. For example, in Slater and Baranowski's (1978) key to the lygaeid genera of North America, *Orphnotrechus* keys closest to *Atrazonotus,* a gonionotine. In Kerzhner and Yachevski's (1964) key to the genera of the Lygaeidae of the European USSR, which has a rich fauna of Rhyparochromini and Megalonotini, in contrast with the small Nearctic fauna, *Orphnotrechus* keys out but poorly to the vicinity of *Lamprodema* Fieber, *Pezocoris* Jakovlev, *Lasiocoris* Fieber and *Hadrocnemis* Jakovlev. At least *Lamprodema* and *Lasiocoris* lack the Y-suture and definitely belong to the Megalonotini. From *Lamprodema* and *Hadrocnemis,*

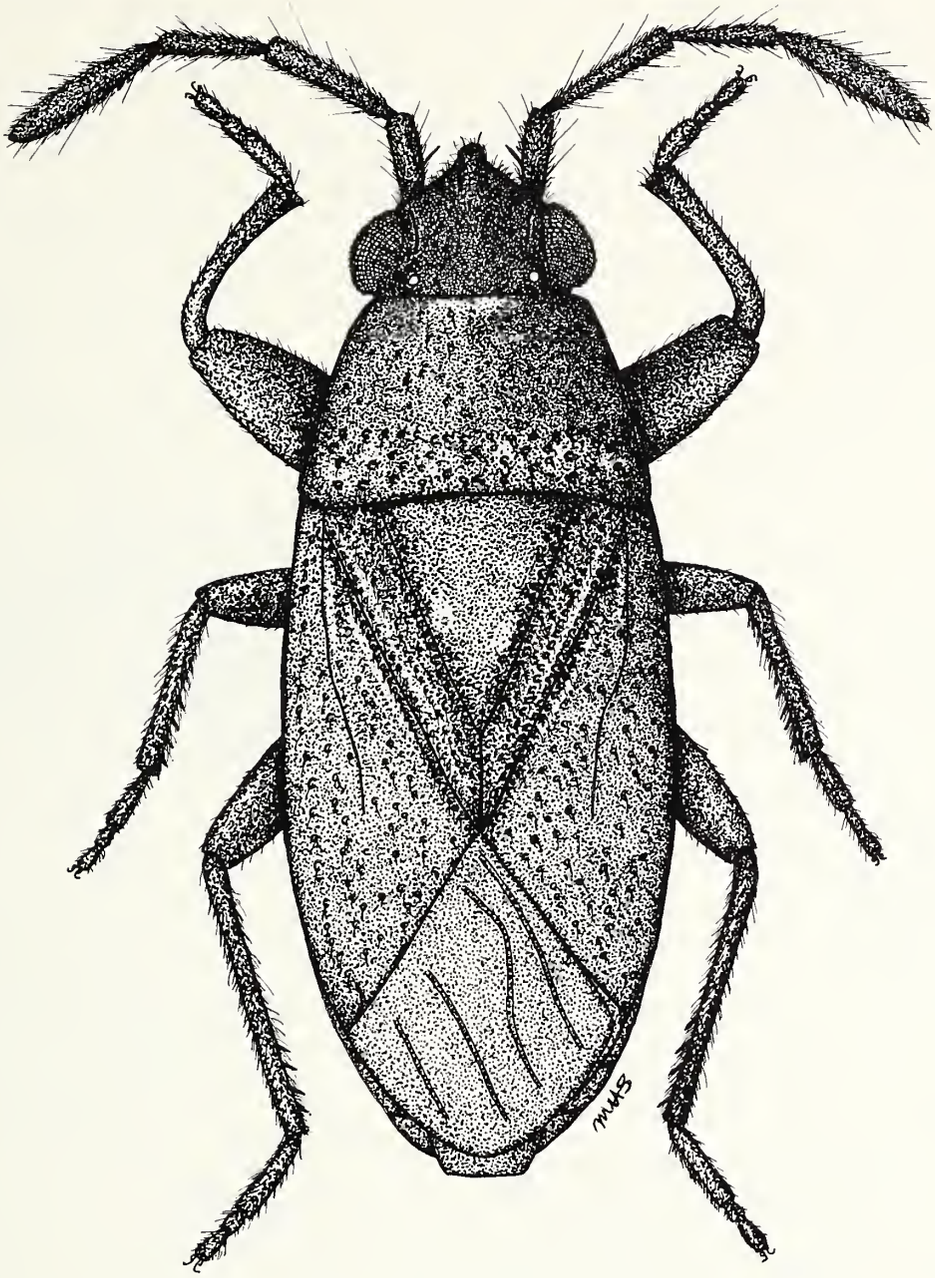
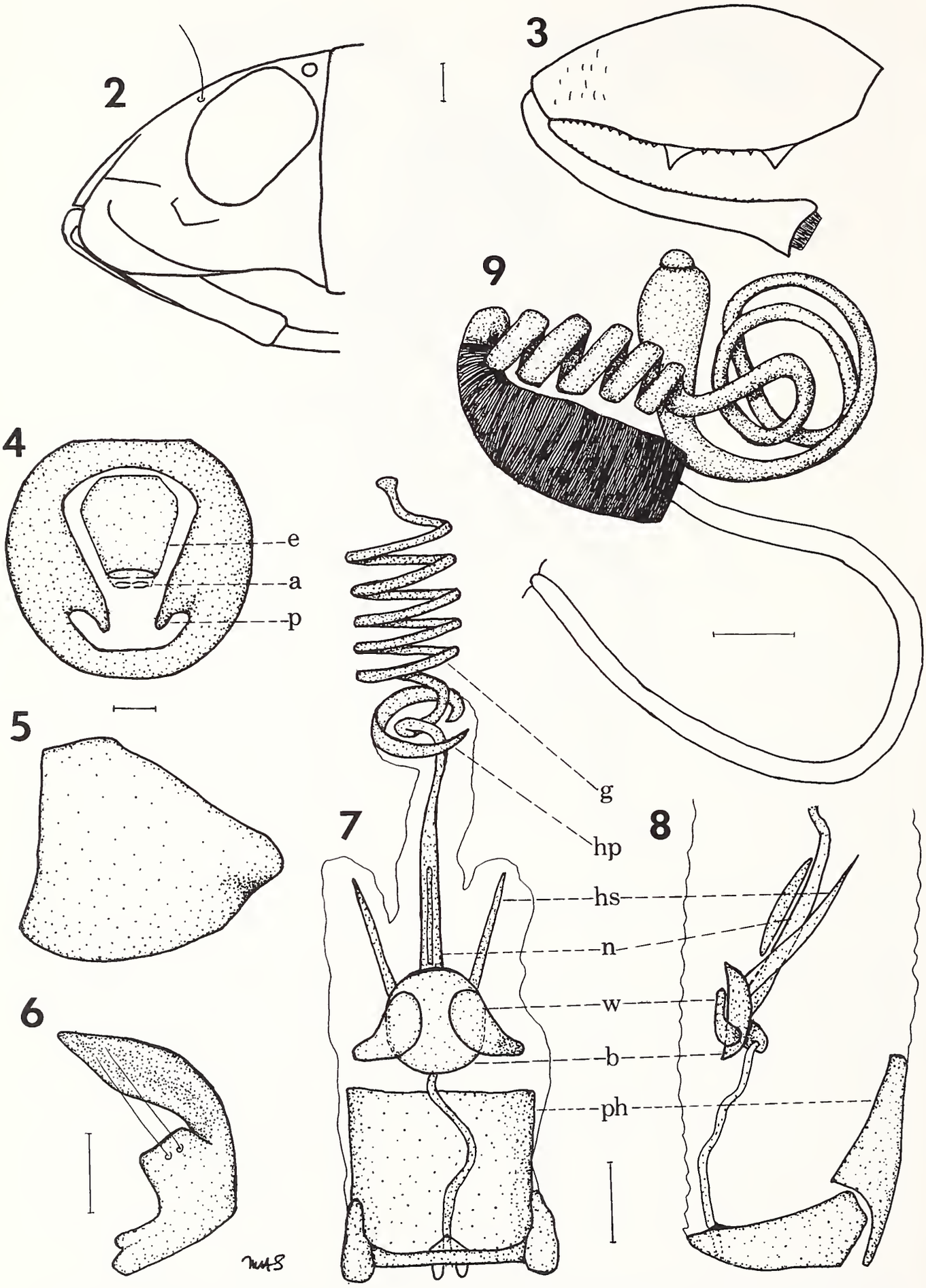


Fig. 1. *Orphnotrechus slateri,* Dorsal view.

Orphnotrechus differs in that the pronotum is dull pruinose above, not shiny, and the posterior lobe of the pronotum is coarsely, not finely punctate. From *Pezocoris, Lasiocoris* and *Hadrocnemis,* which genera Scudder (1962a) called the *Lasiocoris* complex, *Orphnotrechus* differs in that it has no transverse or lateral constriction between anterior and posterior lobe of the pronotum, no long erect dorsal setae on the dorsum, and the hemelytra, scutellum and posterior lobe of the pronotum are dark brown-black, rather than pale in constrast with a dark anterior lobe of the pronotum. *Orphnotrechus* differs from *Orieotrechus* Scudder in not having a V-shape pronotal collar (Scudder 1962b).

The following key will separate the North American genera of Rhyparochromini:

1. Lateral pronotal margins broadly explanate, especially in middle at constriction between anterior and posterior lobes of pronotum ..... *Uhleriola* Horvath
– Lateral pronotal margins narrowly carinate, the carina only slightly widened at constriction between anterior and posterior lobes of pronotum 2



Figs. 2–9. *Orphnotrechus slateri.* 2. Head, lateral view. 3. Profemur and protibia, frontal view. 4. Male genital capsule, dorsoposterior view. 5. Genital capsule, lateral view. 6. Left clasper, frontal view. 7. Aedeagus, dorsal view. 8. Ejaculatory reservoir, lateral view. 9. Spermatheca.

2. Anterolateral corner of pronotum with a single long seta; the anterior lobe of pronotum shiny ..... *Cordillonotus* Scudder
– Pronotum lacking erect long setae; anterior lobe of pronotum dull pruinose 3
3. Distinct V-shaped pale mark on the apex of the scutellum; carinate lateral margins, posterior lobe of pronotum, and hemelytron pale yellow-brown, in constrast with dark anterior lobe and punctures; mesosternum shiny; lateral margins of pronotum distinctly sinuate ..... *Peritrechus* Fieber
– Scutellum, pronotum, and hemelytron dark brown-black with only few obscure maculations; mesosternum pruinose; lateral margins of pronotum nearly straight .... *Orphnotrechus,* n. gen.

Orphnotrechus slateri, new species
Figs. 1–9

Description. Submacropterous male (measurements in millimeters). General coloration of body and appendages dark brown-black; obscure yellow-brown maculations on posterior lobe of pronotum, scutellum, veins of clavus and corium, and trochanters; eyes dark garnet-red. Thorax and hemelytra pruinose, contrasting with shiny head, abdomen and appendages; highly polished iridescent cuticle on inside surface of profemora, posterior surface of antenniferous tubercles, and along lateral carina of pronotum. Coarser punctures on posterior lobe of pronotum, margins of scutellum and corium, punctures (Fig. 1) forming three distinct rows along margins of clavus and anal vein, a weakly defined row in middle of clavus and row on corium along claval suture; fine scattered punctures on anterior lobe of pronotum, middle of scutellum, and thoracic pleura and sterna; dense fine punctures on head and abdominal sterna. Body with fine short adpressed sericeous hairs arising from punctures, hairs more dense and decumbent on head and abdominal sterna; head trichobothria close to eye (Figs. 1, 2); pair of setae on tylus; antennae densely covered with short semi-erect hairs and sparsely with longer hairs, about equal in length to width of antennae; single short spine on inside of first antennal segment; meso- and metatibia and tarsi densely covered with short semi-erect hairs, row of four short spines along distal one-half of mesotibia and one-third of metatibia. Head short, triangular, almost porrect in profile (Fig. 2); width across eyes 0.88, visible length 0.63, preocular length 0.27, interocular distance 0.45; vertex nearly flat, barely higher than eyes. Eyes nude, prominent, almost in contact with pronotal corners, height of eye 0.37. Ocelli moderate in size, dia. 0.06, ocelli and head trichobothria equally close (0.06) to eye. Tylus short, length 0.25, width 0.13, tylar sutures gently converging caudad. Bucculae (Fig. 2) low, widest (0.13) at apex of head, gradually attenuating at level of antenniferous tubercles to become carinae which meet caudad in blunt broad V at level of middle of eye, 0.22 from base of head. Antenniferous tubercles (Fig. 2) very short, hidden from view above (Figs. 1, 2). Pronotum with lateral margins carinate, nearly straight and converging cephalad; anterior margin straight, no collar differentiated, posterior margin gently concave; dorsum slightly convex; anterior lobe set off from posterior

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Symbols: a, anal sclerites; b, reservoir body; e, epiproct; g, gonoporal process; hp, helicoid process; hs, holding sclerite; n, neck; ph, phallotheca; p, parandria; w, reservoir wing. Scale bars = 0.1 mm.

lobe by coarser punctures; pronotal width at humeral angles 1.29, across anterior angles 0.88; length 0.68, length of anterior lobe 0.49. Scutellum slightly elevated in middle, width 0.77, length 0.88. Hemelytra submacropterous (Fig. 1) not reaching apex of abdomen (in macropter, membrane slightly exceeds apex of abdomen); lateral margins of corium gently convex, covering lateral side of abdomen to tergum 5; length of commissure 0.38; longitudinal distance from apex of clavus to apex of corium 0.75; length of median fracture 1.12; length of membrane 1.32; four veins in membrane. Thoracic sterna and pleura moderately convex; propleural pore present; posterior lobe of propleuron set off by vertical impression; scent gland evapatorium rugulose, covering ⅔ of metapleuron and posterior margin of mesopleuron; callosity of scent gland peritreme linear, curving caudad. Trichobothria in normal pattern for tribe, posterior pair on segment five oblique, on same granulose spot, closer to spiracle (0.06) than to posterior margin of segment (0.10); posterior trichobothria of sternum 6 on separate granulose spots. Width of scent gland scar between terga 3 and 4 0.31, terga 4 and 5 0.27, terga 5 and 6 0.27. Antennal segment 1 exceeds apex of head (Fig. 1), segment 1 subcylindrical, 2 and 3 slightly terete, 4 fusiform; antennal segment lengths: I 0.31, II 0.62, III 0.48 IV 0.67. Labium extends to mesocoxae, first segment does not attain base of head, second attains procoxae; labial segment lengths I 0.51, II 1.08, III 0.34, IV 0.36. Profemur (Fig. 3) incrassate, length 0.90, width 0.38, armed beneath with two rows of denticles, inner row of two major and eleven to twelve minor denticles, outer row of ten small denticles; other femora moderately incrassate. Protibia (Fig. 3) bowed, armed beneath with field of small tubercles. Meso- and metatibia each with one distal row of four spines; length of metatibia 1.13, lengths of metatarsomeres, I 0.37, II 0.07, III 0.14. Genital capsule (Figs. 4, 5) subglobose in dorsoposterior view, posterior of capsule with transverse impression; opening oblique; parandria (p) elongated, pointed caudad; epiproct (e) broad, fused with paraproct to form a flattened operculum-like structure, anal sclerites (a) of segment 11 very slender. Paramere (Fig. 6) with flattened, blade-like hook; shank transversely carinate with two long setae on carina. Aedeagus (Figs. 7, 8) with gonoporal process (g) of four turns, secondary gonopore slightly funnel-shaped; helicoid process (hp) narrow, of one turn; holding sclerites (hs), narrow, attached to reservoir; ejaculatory reservoir with body (b) relatively flat, neck (n) long, wings (w) subtriangular, apices bent down over body; phallotheca (ph) with dorsum and sides desclerotized. (Spermatheca [Fig. 9] with bulb small, relatively small apical cap present; distal duct with three distal coils, 5 helical turns, before widening into a short thick annulated mid-duct; basal duct similar in width and shorter than distal duct.) *Total body length:* 3.85 mm.

Holotype: Submacropterous male. NEW MEXICO: Lincoln Co. Cedar Creek, Ruidoso. Elevation 6,900 ft, August 16, 1970. J. R. and M. H. Sweet. Deposited in American Museum of Natural History.

Paratypes: Same data as holotype. 11 submacropterous males, 4 macropterous males, 10 submacropterous females, 2 macropterous females. Specimens deposited in National Museum of Natural History, British Museum (Natural History), Texas A&M Insect Collection College and J. A. Slater and M. H. Sweet personal collections.

Ecology. The specimens were collected in the ponderosa-pinyon pine altitudinal level at 6,900 feet (2,100 m) at the base of Sierra Blanca Mountain, in the Sacramento Mountains, an isolated range in southwestern New Mexico. The collecting site was

an open flat grassy glade in the forest away from roadsides. The insects were running on the ground in the litter between clumps of grasses. The lygaeids *Ligyrocoris* nr. *diffusus* (Uhler), *Geocoris* sp. and *Uhleriola floralis* (Uhler) were collected with *Orphnotrechus*. The lygaeid populations were low, and *Orphnotrechus* was the most abundant, with approximately four specimens per m^2. In the laboratory, over a period of six months, despite feeding on sunflower seeds, *Orphnotrechus* did not mate or lay eggs which indicates a probable strong reproductive diapause (Sweet, 1964). The ovaries contained no eggs in two females dissected. A subsequent return in 1979 found that the entire area had been recently burned and no additional specimens could be found despite protracted search. Because of its similarity to *Peritrechus,* it is interesting to note that several roadside habitats near the collecting site of *Orphnotrechus* had *Peritrechus* nr. *saskatchewanensis* Barber populations present instead. The *Peritrechus* populations were entirely macropterous which corresponded with the temporary disturbed roadside habitats. This contrasts with the largely submacropterous, very likely largely flightless population of *Orphnotrechus* which was in a more permanent, less disturbed natural habitat, a pattern common in rhyparochromine ground bugs (Sweet, 1964). The populations of *Geocoris, Uhleriola* and *Ligyrocoris* found with *Orphnotrechus* were similarly pterygopolymorphic, and the lygaeid species with *Peritrechus* were all macropterous.

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